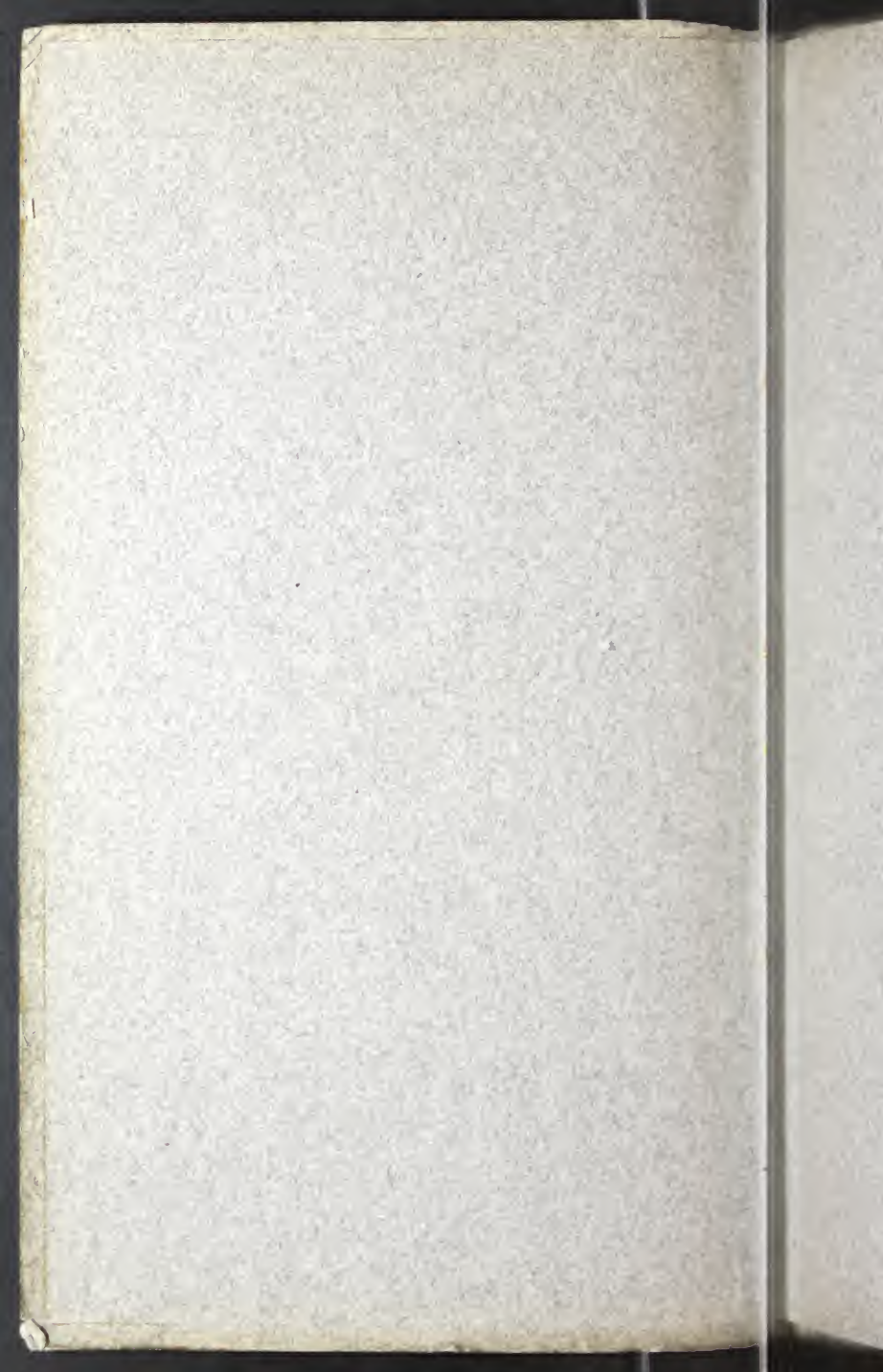


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# CHICAGO BRIDGE & IRON WORKS

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CHICAGO BRIDGE AND IRON WORKS

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# CHICAGO BRIDGE *and* IRON WORKS

*Horace E. Horton proprietor*

*Engineers & Contractors for*

## Metal Structures



*Manufacturers & Builders of  
Water Towers, Stand Pipes,  
Smoke Stacks, Grain Tanks,  
Bridges, Riveted Pipe,  
Roof Trusses, Buildings,  
Locomotive Turntables.*

*Office & Works*

THROOP & 105TH STREETS  
CHICAGO Illinois U. S. A.

# Metal Structures



LOUISVILLE, KY.

Capacity, 1,200,000 gallons      Height, 220 feet

Louisville Water Co.

*Standard design*

Chicago



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# Chicago Bridge & Iron Works



THE value of elevated tanks for water storage has long been recognized by all leading engineers and those familiar with the subject of water works design. As the task of determining which type of structure is best adapted to the needs of any individual community, or location, often devolves upon those having made no special study of this question, it is the object of this booklet—our seventh edition of *Metal Structures*—to point out, briefly, the advantages of the several types of steel tanks which we are manufacturing.

Nearly all the structures illustrated have been built since our last issue and represent the best and most advanced types of this line of construction.

The data and tables on the latter pages will be found useful in determining the size of tank and height of structure required.

# Metal Structures



COLUMBUS, OHIO

Capacity, 100,000 gallons      Height, 150 feet

Columbus State Hospital

*Standard design*

Chicago



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# *Chicago Bridge & Iron Works*

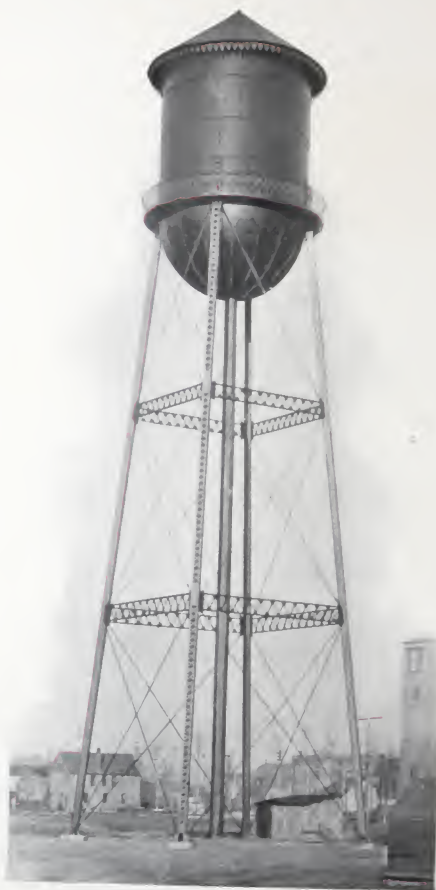


AN elevated reservoir is a necessity for the most satisfactory and economical operation of any water works plant. In this way a reserve supply for fire protection is always at hand, the pressure on the mains is high and uniform, and the cost of pumping is reduced to a minimum, as an inspection of the data on the following page will show.

Where this reservoir can be located on a natural elevation, a tank of large diameter and low height placed upon the ground is preferable; where no elevation can be reached at a reasonable cost, the steel tower and tank is the logical substitute.

In deciding which is the more desirable, account should be taken of the advantages of central location as well as the cost of laying the additional pipe usually required to reach the desired elevation.

# Metal Structures



CHICAGO, ILL.

Capacity, 180,000 gallons      Height, 145 feet

Washington Heights Pumping Station

City Water Works

*Standard design*

Chicago



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# Chicago Bridge & Iron Works



THE following figures show the cost of fuel for pumping at the Washington Heights Station of the Chicago Water Works for a period of five years, during which the plant was operated by direct pressure, and by pumping to an elevated reservoir.

These figures show the saving in fuel alone accomplished by the latter method, the saving in wear and tear on the machinery and mains is inestimable.

Years	Million Gals. Pumped	Billion Foot Lbs.	Total Cost of Fuel	Cost per Billion Ft. Lbs.
1899	107.7	98	\$1453	\$14.82
1900	118.2	100	2345	23.45
1901	139.1	94	2852	30.50
1902	157.2	187	2028	10.84
1903	243.7	290	2508	8.65

Note: During 1899 and a portion of 1900 a wood tank was being used. This leaked so badly that it was abandoned and the system operated by direct pressure until January, 1902, when the steel tank illustrated opposite was put into service.

These figures were compiled from the monthly reports covering the entire period.

# Metal Structures



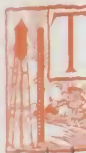
TICONDEROGA, N. Y.

Capacity, 50,000 gallons      Height, 104 feet

International Paper Co.

Standard design

Chicago L



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## *Chicago Bridge & Iron Works*



THE first metal structures used for the storage of water were stand pipes, built of small diameter and having sufficient height to give the desired pressure when filled. These have always proven very unsatisfactory. The amount of serviceable water stored in such a tank is only a fraction of the total capacity, as it is well recognized that in a level town any water stored below an elevation of eighty feet is of little or no value for fire protection.

Several times as much water can always be stored above this height, for the same cost of structure, by using an elevated tank rather than a stand pipe. The tall stand pipe presents other obvious disadvantages in the matter of extreme variation of pressure which it gives between the two conditions of being full and empty.

# Metal Structures



CAMDEN, N. J.

Capacity, 150,000 gallons      Height, 242 feet

New York Shipbuilding Co.

*Special design*

Chicago L



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## *Chicago Bridge & Iron Works*



ITIES and villages should be sure to get their tank large enough. There should be at all times enough water stored in reserve to furnish several fire streams and supply the domestic consumption when the pumps are not running. Thirty gallons per inhabitant, with a liberal allowance for increase, should be the minimum, and no tank for this service should have a less capacity than thirty thousand gallons.

Public and private institutions should make careful investigation of the amount of water they use and allow a large excess to give them proper fire protection.

The capacity and height of tanks for fire protection to factory buildings is generally prescribed by the insurance companies.

# Metal Structures



WINNIPEG, MAN., CANADA

Capacity large tank, 125,000 gallons      Height, 135 feet

Capacity small tank, 10,000 gallons

Canadian Pacific Ry.

*Standard design*

Chicago



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## Chicago Bridge & Iron Works



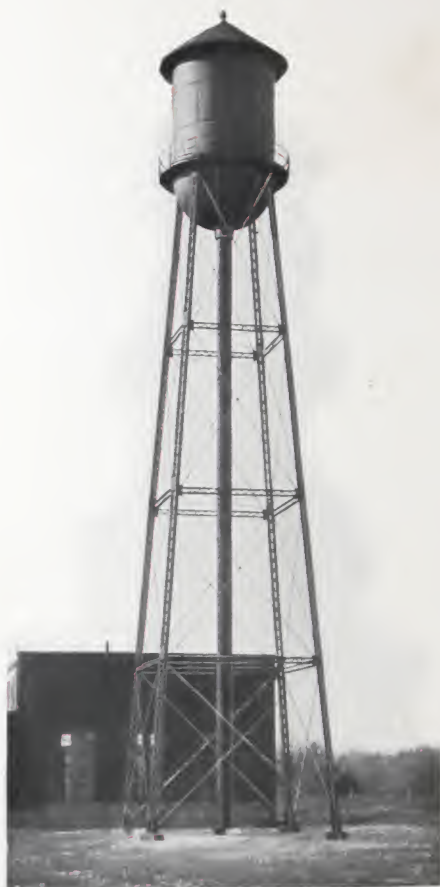
AS primary sources of supply to automatic sprinkler equipments our steel tanks are invaluable on account of their long life, small cost for maintenance and the fact that they are never in danger of bursting suddenly with attendant loss of life and property.

Having built a large number of structures for this purpose we are entirely familiar with the insurance companies' requirements for this class of work.

The illustration shows a new type of structure which we have developed, the larger tank being kept full of water for fire protection and the smaller suspended tank being used for domestic service in the buildings.

The smaller tank can be built in this way very economically.

# Metal Structures



GALT, ONT., CANADA

Capacity, 30,000 gallons

Height, 114 feet

Goldie and McCulloch Co.

*Standard design*

Chicago



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## Chicago Bridge & Iron Works



OUR tank at Louisville, illustrated on page four, has attracted widespread attention on account of its great size. This is the largest elevated tank ever built, having a capacity of 1,200,000 gallons and a height of 220 feet from top of foundations to top of tank. The tank is 50 feet in diameter and 90 feet deep, with 48" riveted steel riser pipe.

This structure is built in accordance with our standard specifications and in the same general proportions as our smaller standard designs, to which fact is due the utter failure of the photograph to convey an adequate impression of its dimensions.

This work illustrates the possibilities of the construction of similar tanks on very high towers for fire protection in the congested districts of our large cities. The advantages of such a structure are obvious, the only objection heretofore offered to this idea has been that their construction was impractical. We are prepared to construct tanks of much greater dimensions than the one referred to.

# Metal Structures



NORTH RUTLAND, VT.

Capacity, 70,000 gallons. Height, 220 feet

Chittenden Power Co.

*Special design*

Chicago



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## Chicago Bridge & Iron Works



ON the opposite page is shown a water tower built in connection with a hydro-electric power development.

This structure is located at the power house and has a total height slightly greater than the hydraulic head at that point. The riser pipe is directly connected to the pipe line from the reservoir, so the water level is always within the tank. When one or more generators in the power station are quickly loaded the stored water in the tank is sufficient to prevent more than a very small drop in head. When the load at the station is suddenly reduced by a large amount, the surplus energy of the column of water 8,000 feet long that is flowing down from the reservoir, is expended into an overflow at the top of the tank. Surging in the pipe line is thus prevented and a constant pressure at the water wheels is maintained.

We have built several water towers for this purpose.

# Metal Structures



COLLEGE HILL, OHIO

Capacity, 100,000 gallons      Height, 154 feet  
City Water Works

*Special design*

Chicago



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## Chicago Bridge & Iron Works



WE are especially well prepared to undertake work which has to be designed to meet unusual conditions or requirements.

Being specialists in water tower design, we are at all times ready and willing to offer our advice, or to otherwise assist those in need of such a structure to formulate their requirements.

We can, of course, make much prompter deliveries when our standard designs are adhered to. These, the result of years of experience and careful study, will be found well adapted to almost every need.

The following illustrations give a fair idea of the general appearance of our standard water towers built in heights ranging from two to seven stories.

# *Metal Structures*



NORTH FT. WORTH, TEX.

Capacity, 100,000 gallons      Height, 100 feet

City Water Works

*Standard design*

*Chicago Bridge & Iron Works*



ST. ELMO, ILL.

Capacity, 60,000 gallons      Height, 120 feet

City Water Works

*Standard design*

# Metal Structures



LITTLE ROCK, ARK.

Capacity, 100,000 gallons      Height, 159 feet  
State Asylum

*Standard design*

Chicago

Capacity



# Chicago Bridge & Iron Works



TOCOMA PARK, MD.

Capacity, 50,000 gallons      Height, 164 feet  
City Water Works

*Standard design*

# Metal Structures



BOSTON, MASS.

Capacity, 100,000 gallons

Height, 239 feet

Boston and Maine R. R.

*Standard design*

Chicago



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## Chicago Bridge & Iron Works



WE designed and erected the first hemispherical bottom tank of the type shown in the foregoing illustrations in 1894. The high grade of work we are now doing is the result of twelve years of experiments and improvements along these same lines. We now have drawings and templets on hand for almost every size of structure, which enables us to make the promptest shipments and insures an absolute fit of all connections. Our organization for handling this work is such that poor workmanship of any kind is practically impossible. We gladly refer to our past customers, shown in the list commencing on page 49, with confidence that all would speak of our work in highest terms.

The two following illustrations show designs which are most economical for tanks of small capacity.

# *Metal Structures*



WILSON, N. C.

Capacity, 25,000 gallons

Height, 100 feet

Imperial Tobacco Co.

*Standard design with three posts*



res

# Chicago Bridge & Iron Works



SUMMIT, ILL.

Capacity, 5,000 gallons

Height, 46 feet

Resurrection Cemetery

*Standard design*

# Metal Structures



SCHEENECTADY, N. Y.

Capacity, 2,380,000 gallons

Diameter, 90 feet. Height, 50 feet

City Water Works

# Chicago



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# Chicago Bridge & Iron Works



HERE a tank can be located upon a natural elevation the most economical form is to make the diameter ten to twenty per cent greater than the height. In no case should the height exceed sixty or seventy feet.

There have been a great many failures of stand pipes recorded, the majority of which are traceable to weakly riveted joints. We wish to call attention to the tables on riveted joints, pages 44 to 48, which have been prepared especially for tank and stand pipe work. All other published tables as far as we know have been designed for boiler work, which must be made tight against high steam pressure and which makes the character of joint required entirely different from that needed in a tank.

# *Metal Structures*



MENDENHALL, MISS.  
Capacity, 50,000 gallons  
Gulf and Ship Island R. R.

*Standard design*



# Chicago Bridge & Iron Works



EAST WINONA, WIS.  
Capacity, 100,000 gallons  
Chicago, Burlington and Quincy Ry.

*Standard design*

# Metal Structures



LOCK HAVEN, ILL.  
Capacity, 60,000 gallons  
Chicago, Peoria and St. Louis Ry.

*Standard design*

Chicago



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## Chicago Bridge & Iron Works



STEEL tanks are being adopted very rapidly by the railroads. Unlike wood tanks, they do not leak, rot out, burst or burn, and the expense of maintenance is much less. It will be but a few years until the wooden tank will be as obsolete as the wooden bridge for railway use.

Our standard railway tanks, on account of the economy effected in their design, cost little if any more than a wood tank on a steel trestle.

The riser pipe is built of sufficient size to prevent freezing in the coldest weather. This removes the necessity of wooden frost casing, and puts the tank in the class of permanent structures.

This pipe is also designed to act as a settling basin for sediment, which may be drawn off through the blow-off valve in the bottom without emptying the tank.

# Metal Structures



DETROIT, MICH.

Diameter, 14'-6"

Height, 242 feet

Murphy Power Co.

Chicago



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HEIGHT OF

Dist in ft.	50	60
18	23	25
21	35	38
24	49	54
27	65	72
30	84	92
33	115	125
36	141	152
39	172	182
42	208	218
45	248	258
48	292	302
51	340	350
54	392	402
57	448	458
60	508	518
63	572	582
66	640	650
69	712	722
72	788	798
75	868	878
78	952	962
81	1040	1050
84	1132	1142
87	1228	1238
90	1328	1338
93	1432	1442
96	1540	1550
99	1652	1662
102	1768	1778
105	1888	1898
108	2012	2022
111	2140	2150
114	2272	2282
117	2408	2418
120	2548	2558
123	2692	2702
126	2840	2850
129	2992	3002
132	3148	3158
135	3308	3318
138	3472	3482
141	3640	3650
144	3812	3822
147	3988	3998
150	4168	4178
153	4352	4362
156	4540	4550
159	4732	4742
162	4928	4938
165	5128	5138
168	5332	5342
171	5540	5550
174	5752	5762
177	5968	5978
180	6188	6198
183	6412	6422
186	6640	6650
189	6872	6882
192	7108	7118
195	7348	7358
198	7592	7602
201	7840	7850
204	8092	8102
207	8348	8358
210	8608	8618
213	8872	8882
216	9140	9150
219	9412	9422
222	9688	9698
225	9968	9978
228	10252	10262
231	10540	10550
234	10832	10842
237	11128	11138
240	11428	11438
243	11732	11742
246	12040	12050
249	12352	12362
252	12668	12678
255	12988	12998
258	13312	13322
261	13640	13650
264	13972	13982
267	14308	14318
270	14648	14658
273	14992	15002
276	15340	15350
279	15692	15702
282	16048	16058
285	16408	16418
288	16772	16782
291	17140	17150
294	17512	17522
297	17888	17898
300	18268	18278
303	18652	18662
306	19040	19050
309	19432	19442
312	19828	19838
315	20228	20238
318	20632	20642
321	21040	21050
324	21452	21462
327	21868	21878
330	22288	22298
333	22712	22722
336	23140	23150
339	23572	23582
342	24008	24018
345	24448	24458
348	24892	24902
351	25340	25350
354	25792	25802
357	26248	26258
360	26708	26718
363	27172	27182
366	27640	27650
369	28112	28122
372	28588	28598
375	29068	29078
378	29552	29562
381	30040	30050
384	30532	30542
387	31028	31038
390	31528	31538
393	32032	32042
396	32540	32550
399	33052	33062
402	33568	33578
405	34088	34098
408	34612	34622
411	35140	35150
414	35672	35682
417	36208	36218
420	36748	36758
423	37292	37302
426	37840	37850
429	38392	38402
432	38948	38958
435	39508	39518
438	40072	40082
441	40640	40650
444	41212	41222
447	41788	41798
450	42368	42378
453	42952	42962
456	43540	43550
459	44132	44142
462	44728	44738
465	45328	45338
468	45932	45942
471	46540	46550
474	47152	47162
477	47768	47778
480	48388	48398
483	49012	49022
486	49640	49650
489	50272	50282
492	50908	50918
495	51548	51558
498	52192	52202
501	52840	52850
504	53492	53502
507	54148	54158
510	54808	54818
513	55472	55482
516	56140	56150
519	56812	56822
522	57488	57498
525	58168	58178
528	58852	58862
531	59540	59550
534	60232	60242
537	60928	60938
540	61628	61638
543	62332	62342
546	63040	63050
549	63752	63762
552	64468	64478
555	65188	65198
558	65912	65922
561	66640	66650
564	67372	67382
567	68108	68118
570	68848	68858
573	69592	69602
576	70340	70350
579	71092	71102
582	71848	71858
585	72608	72618
588	73372	73382
591	74140	74150
594	74912	74922
597	75688	75698
600	76468	76478
603	77252	77262
606	78040	78050
609	78832	78842
612	79628	79638
615	80428	80438
618	81232	81242
621	82040	82050
624	82852	82862
627	83668	83678
630	84488	84498
633	85312	85322
636	86140	86150
639	86972	86982
642	87808	87818
645	88648	88658
648	89492	89502
651	90340	90350
654	91192	91202
657	92048	92058
660	92908	92918
663	93772	93782
666	94640	94650
669	95512	95522
672	96388	96398
675	97268	97278
678	98152	98162
681	99040	99050
684	99932	99942
687	100828	100838
690	101728	101738
693	102632	102642
696	103540	103550
699	104452	104462
702	105368	105378
705	106288	106298
708	107212	107222
711	108140	108150
714	109072	109082
717	110008	110018
720	110948	110958
723	111892	111902
726	112840	112850
729	113792	113802
732	114748	114758
735	115708	115718
738	116672	116682
741	117640	117650
744	118612	118622
747	119588	119598
750	120568	120578
753	121552	121562
756	122540	122550
759	123532	123542
762	124528	124538
765	125528	125538
768	126532	126542
771	127540	127550
774	128552	128562
777	129568	129578
780	130588	130598
783	131612	131622
786	132640	132650
789	133672	133682
792	134708	134718
795	135748	135758
798	136792	136802
801	137840	137850
804	138892	138902
807	139948	139958
810	141008	141018
813	142072	142082
816	143140	143150
819	144212	144222
822	145288	145298
825	146368	146378
828	147452	147462
831	148540	148550
834	149632	149642
837	150728	150738
840	151828	151838
843	152932	152942
846	154040	154050
849	155152	155162
852	156268	156278
855	157388	157398
858	158512	158522
861	159640	159650
864	160772	160782
867	161908	161918
870	163048	163058
873	164192	164202
876	165340	165350
879	166492	166502
882	167648	167658
885	168808	168818
888	169972	169982
891	171140	171150
894	172312	172322
897	173488	173498
900	174668	174678
903	175852	175862
906	177040	177050
909	178232	178242
912	179428	179438
915	180628	180638
918	181832	181842
921	183040	183050
924	184252	184262
927	185468	185478
930	186688	186698
933	187912	187922
936	189140	189150
939	190372	190382
942	191608	191618
945	192848	192858
948	194092	194102
951	195340	195350
954	196592	196602
957	197848	197858
960	199108	199118
963	200372	200382
966	201640	201650
969	202912	202922
972	204188	204198
975	205468	205478
978	206752	206762
981	208040	208050
984	209332	209342
987	210628	210638
990	211928	211938
993	213232	213242
996	214540	214550
999	215852	215862

REDUCTION

Total length of fl

Chimney Dr'n m



# Chicago Bridge & Iron Works



WE design and construct self-supporting steel smoke stacks of any size. We recommend in all cases that they be lined for a distance of thirty or forty feet above the britchen connection with fire brick, and above that with common brick or cement plaster.

The following table shows the size of chimney necessary for a given boiler rating:

HEIGHT OF CHIMNEYS IN FEET—COMMERCIAL HORSE POWER

Diam. in.	50	60	70	80	90	100	110	125	150	175	200
18	23	25	27	...	...	...	...	...	...	...	...
21	35	38	41	...	...	...	...	...	...	...	...
24	49	54	58	62	...	...	...	...	...	...	...
27	65	72	78	83	...	...	...	...	...	...	...
30	84	92	100	107	113	...	...	...	...	...	...
33	...	115	125	133	141	...	...	...	...	...	...
36	...	141	152	163	173	182	...	...	...	...	...
39	...	...	183	196	208	219	...	...	...	...	...
42	...	...	216	231	245	258	271	294	318	341	364
48	...	...	...	311	330	348	365	389	428	459	491
54	...	...	...	363	427	449	472	503	551	594	635
60	...	...	...	505	539	565	593	632	692	748	797
66	...	...	...	...	658	694	728	776	849	918	981
72	...	...	...	...	792	835	876	934	1023	1105	1181
78	...	...	...	...	...	995	1038	1107	1212	1310	1400
84	...	...	...	...	...	1163	1214	1294	1418	1531	1637
90	...	...	...	...	...	1344	1415	1496	1639	1770	1893
96	...	...	...	...	...	1537	1616	1720	1876	2027	2167
108	...	...	...	...	...	...	...	...	2290	2470	2637
120	...	...	...	...	...	...	...	...	2827	3049	3255

REDUCTION OF CHIMNEY DRAFT BY LONG FLUES

Total length of flues in ft	50	100	200	400	600	800	1000	2000
Chimney Dr't in per cent	100	93	79	66	58	52	48	35

# Metal Structures

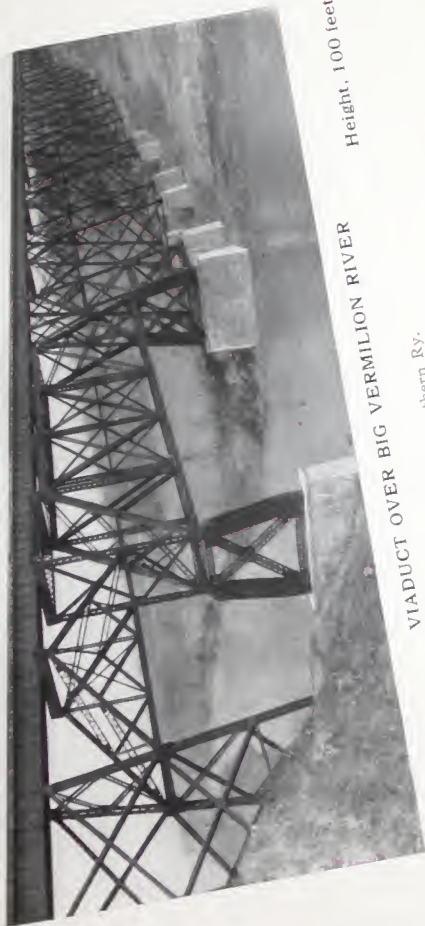


PORTABLE TIE PRESERVING RETORT

Diameter, 6 feet

Length, 130 feet

Union Pacific R. R. Co.



Height, 100 feet

VIADUCT OVER BIG VERMILION RIVER

Chicago Southern Ry.

Length, 1600 feet

# Metal Structures

Table showing Capacity in Gallons per  
Lineal Foot of Cylinders

Diameter	Capacity	Diameter	Capacity
1	5.9	51	15281
2	23.5	52	15887
3	52.9	53	16503
4	94	54	17132
5	146.9	55	17772
6	211.5	56	18425
7	287.9	57	19089
8	376	58	19764
9	475.9	59	20452
10	587.5	60	21151
11	711	61	21862
12	846	62	22584
13	993	63	23319
14	1152	64	24065
15	1322	65	24823
16	1504	66	25592
17	1698	67	26374
18	1904	68	27167
19	2121	69	27972
20	2350	70	28788
21	2591	71	29617
22	2844	72	30457
23	3108	73	31309
24	3384	74	32173
25	3672	75	33048
26	3972	76	33935
27	4283	77	34834
28	4606	78	35745
29	4941	79	36667
30	5288	80	37601
31	5646	81	38547
32	6016	82	39505
33	6398	83	40474
34	6792	84	41455
35	7197	85	42488
36	7614	86	43453
37	8043	87	44469
38	8484	88	45498
39	8936	89	46537
40	9400	90	47589
41	9876	91	48653
42	10364	92	49727
43	10863	93	50815
44	11374	94	51913
45	11897	95	53024
46	12432	96	54146
47	12978	97	55280
48	13536	98	56425
49	14106	99	57583
50	14688	100	58752


Chicago L

Dime  
Tan



The square of the k  
the for finding  
Diagonal  
Square =

Dimensions of our Standard  
Tanks, for which we have  
Drawings and Tem-  
plates on hand



Capacity Gallons	Diameter Feet D	Height Feet h	Width of Balcony Inches
15000	12	14	18
20000	13	16	18
25000	14	17	18
30000	15	18	24
35000	16	18	24
40000	17	21	24
45000	17	20	24
50000	18	23	24
55000	18	22	24
60000	19	24	24
65000	19	23	24
70000	20	25	27
75000	20	24	27
80000	21	26	27
85000	21	28	27
90000	21	26	27
95000	22	28	27
100000	22	26	27
105000	23	28	30
110000	23	26	30
115000	24	28	30
120000	24	29	30
125000	24	27	30
130000	25	30	30
140000	25	33	36
150000	25	35	36
175000	26	35	36
200000	28	37	36
250000	30	40	
300000	32		

We have stock material for all sizes up to 100,000 gallons capacity.

Rule for finding size of base:  
 $\text{Diagonal} = D + .23 (H - h)$  } Closely  
 $\text{Square} = .71 D + .162 (H - h)$  } Approximate



# Metal Structures



Thicknesses and Weights of Cast Iron Pipe

Nominal Inside Diam. Inches	100 FT. HEAD 43 LBS. PRESSURE			200 FT. HEAD 86 LBS. PRESSURE			300 FT. HEAD 130 LBS. PRESSURE		
	Thick- ness Inches	Weight per		Thick- ness Inches	Weight per		Thick- ness Inches	Weight per	
		Foot	Length		Foot	Length		Foot	Length
3	.39	14.5	175	.42	16.2	194	.45	17.1	205
4	.42	20.0	240	.45	21.7	260	.48	23.3	280
6	.44	30.8	370	.48	33.3	400	.51	35.8	430
8	.46	42.9	515	.51	47.5	570	.56	52.1	625
10	.50	57.1	685	.57	63.8	765	.62	70.8	850
12	.54	72.5	870	.62	82.1	985	.68	91.7	1100
14	.57	89.6	1075	.66	102.5	1230	.74	116.7	1400
16	.60	108.3	1300	.70	125.0	1500	.80	143.8	1725
18	.64	129.2	1550	.75	150.0	1800	.87	175.0	2100
20	.67	150.0	1800	.80	175.0	2100	.92	208.3	2500
24	.76	204.2	2450	.89	233.3	2800	1.04	279.2	3350
30	.88	291.7	3500	1.03	333.3	4000	1.20	400.0	4800
36	.99	391.7	4700	1.15	454.2	5450	1.36	545.8	6550
42	1.10	512.5	6150	1.28	591.7	7100	1.54	716.7	8000
48	1.26	666.7	8000	1.42	750.0	9000	1.71	908.3	10000
54	1.35	800.0	9600	1.55	933.3	11200	1.90	1141.7	13700
60	1.39	916.7	11000	1.67	1104.2	13250	2.00	1341.7	16100
72	1.62	1283.4	15400	1.95	1545.8	18550	2.39	1904.2	22850
84	1.72	1633.4	19600	2.22	2104.2	25250	...	...	...

Chicago L

Fire Stream

This Table

Vertical Height Feet	Best Fire Jet	
	Height Feet	Reach Feet
15	43	42
20	31	47
25	28	51
30	24	55
35	21	58
40	18	61
45	16	64
50	14	67
55	12	70
60	11	72
65	10	74
70	9	76
75	8	78
80	7	80
85	6	82
90	5	83

Fire Stream

Vertical Height Feet	Best Fire Jet	
	Height Feet	Reach Feet
25	44	4
30	32	5
35	28	5
40	24	6
45	21	6
50	18	6
55	16	7
60	14	7
65	12	7
70	11	7
75	10	8
80	9	8
85	8	8
90	7	8
95	6	8
100	5	8

# Chicago Bridge & Iron Works

Iron Pipe

FT. HEAD  
LBS. PRESSURE

Weight per  
Foot Length

Foot Length

25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100

17.1 23.3 35.8 52.1 70.8 91.7 116.7 143.8 175.0 208.3 279.2 400.0 545.8 716.7 908.3 1141.7 1341.7 1642.2

206 280 430 625 850 1100 1400 1725 2100 2500 3350 4800 6550 8600 10900 13700 16100 22850

## Fire Stream Data for 1-Inch Smooth Nozzle

This Table also serves for 1½-Inch Ring Nozzle

Indicated Pressure Pounds	Best Fire Jet		Gallons per Minute	Height of Tower required to maintain Fire Streams as shown in columns 2 and 3 through 2½-inch Rubber Hose Lines mentioned					
	Height Feet	Reach Feet		50 Feet	100 Feet	200 Feet	300 Feet	400 Feet	500 Feet
25	43	42	147	67	71	82	94	106	117
30	51	47	161	77	84	99	113	126	140
35	58	51	174	92	102	117	131	147	163
40	64	55	186	106	115	133	151	168	186
45	69	58	198	119	129	149	170	191	209
50	73	61	208	131	142	165	188	211	234
55	76	64	218	145	158	181	207	232	257
60	79	67	228	158	172	200	226	253	280
65	82	70	237	172	186	216	246	273	303
70	85	72	246	184	200	232	264	294	327
75	87	74	255	197	216	248	282	317	349
80	89	76	263	211	230	264	300	338	372
85	91	78	274	226	243	282	319	359	398
90	92	80	279	237	257	298	338	379	420
95	94	82	287	250	271	314	359	400	444
100	96	83	295	264	287	331	377	420	467

## Fire Stream Data for 1½-Inch Smooth Nozzle

Indicated Pressure Pounds at Nozzle	Best Fire Jet		Gallons per Minute	Height of Tower required to maintain Fire Streams as shown in columns 2 and 3 through 2½-inch Rubber Hose Lines mentioned.					
	Height Feet	Reach Feet		50 Feet	100 Feet	200 Feet	300 Feet	400 Feet	500 Feet
25	44	44	188	72	80	100	119	237	156
30	52	50	206	86	96	121	142	165	186
35	59	54	222	100	112	140	165	190	218
40	65	59	238	116	128	161	188	218	248
45	70	63	252	130	144	180	204	246	278
50	75	66	266	144	160	201	227	274	310
55	80	69	279	158	176	222	250	302	340
60	83	72	291	172	192	241	273	327	370
65	86	75	303	188	208	262	296	355	402
70	88	77	314	202	224	281	322	383	432
75	90	79	325	216	240	302	345	411	464
80	92	81	336	230	256	323	368	436	494
85	94	83	346	246	272	342	391	464	524
90	96	85	356	260	288	363	414	492	556
95	98	87	366	274	304	382	439	520	586
100	99	89	376	288	320	403	462	548	608

# Metal Structures

Chicago Br

Table showing Properties of Lap Joints

Thickn'ss of Plate	Number Rows	½-in. Rivets			⅝-in. Rivets			¾-in. Rivets			⅞-in. Rivets		
		Eff.	Pitch	Sec.	Eff.	Pitch	Sec.	Eff.	Pitch	Sec.	Eff.	Pitch	Sec.
1 4	1	393	150	098	490	188	122	500	225	125	...	...	...
	2	654	180	163	700	250	175	650	250	160	...	...	...
	3	739	239	185	...	...	...	...	...	...	...	...	...
3 9	1	349	150	098	435	188	122	500	225	140	500	263	140
	2	627	167	176	684	239	192	685	281	193	...	...	...
	3	714	220	200	733	281	206	...	...	...	...	...	...
5 16	1	314	150	098	392	188	122	471	225	147	500	263	156
	2	600	157	187	663	222	207	708	300	221	679	312	212
	3	692	204	216	746	296	233	...	...	...	...	...	...
11 32	1	286	150	098	356	188	122	428	225	207	500	263	172
	2	571	150	196	640	209	220	688	280	237	709	344	244
	3	673	191	230	727	276	250	745	344	256	...	...	...
3 8	1	262	150	098	327	188	123	393	225	147	458	263	172
	2	523	150	196	615	198	231	669	264	251	707	340	265
	3	654	180	245	710	259	266	752	353	282	...	...	...
13 32	1	241	150	098	301	188	122	363	225	147	423	263	172
	2	482	150	196	603	188	245	651	251	264	689	322	280
	3	635	171	258	693	245	282	737	332	299	...	...	...
7 16	1	224	150	098	280	188	123	337	225	147	393	263	172
	2	449	150	196	561	188	245	634	239	277	671	303	294
	3	619	163	271	677	233	296	722	315	316	756	409	331
15 32	1	224	150	098	280	188	123	337	225	147	393	263	172
	2	449	150	196	561	188	245	634	239	277	671	303	294
	3	619	163	271	677	233	296	722	315	316	756	409	331
1 2	1	224	150	098	280	188	123	337	225	147	393	263	172
	2	449	150	196	561	188	245	634	239	277	671	303	294
	3	619	163	271	677	233	296	722	315	316	756	409	331
17 32	1	224	150	098	280	188	123	337	225	147	393	263	172
	2	449	150	196	561	188	245	634	239	277	671	303	294
	3	619	163	271	677	233	296	722	315	316	756	409	331
9 16	1	224	150	098	280	188	123	337	225	147	393	263	172
	2	449	150	196	561	188	245	634	239	277	671	303	294
	3	619	163	271	677	233	296	722	315	316	756	409	331
19 32	1	224	150	098	280	188	123	337	225	147	393	263	172
	2	449	150	196	561	188	245	634	239	277	671	303	294
	3	619	163	271	677	233	296	722	315	316	756	409	331
5 8	1	224	150	098	280	188	123	337	225	147	393	263	172
	2	449	150	196	561	188	245	634	239	277	671	303	294
	3	619	163	271	677	233	296	722	315	316	756	409	331
21 32	1	224	150	098	280	188	123	337	225	147	393	263	172
	2	449	150	196	561	188	245	634	239	277	671	303	294
	3	619	163	271	677	233	296	722	315	316	756	409	331
23 32	1	224	150	098	280	188	123	337	225	147	393	263	172
	2	449	150	196	561	188	245	634	239	277	671	303	294
	3	619	163	271	677	233	296	722	315	316	756	409	331
25 32	1	224	150	098	280	188	123	337	225	147	393	263	172
	2	449	150	196	561	188	245	634	239	277	671	303	294
	3	619	163	271	677	233	296	722	315	316	756	409	331
27 32	1	224	150	098	280	188	123	337	225	147	393	263	172
	2	449	150	196	561	188	245	634	239	277	671	303	294
	3	619	163	271	677	233	296	722	315	316	756	409	331
29 32	1	224	150	098	280	188	123	337	225	147	393	263	172
	2	449	150	196	561	188	245	634	239	277	671	303	294
	3	619	163	271	677	233	296	722	315	316	756	409	331
31 32	1	224	150	098	280	188	123	337	225	147	393	263	172
	2	449	150	196	561	188	245	634	239	277	671	303	294
	3	619	163	271	677	233	296	722	315	316	756	409	331
33 32	1	224	150	098	280	188	123	337	225	147	393	263	172
	2	449	150	196	561	188	245	634	239	277	671	303	294
	3	619	163	271	677	233	296	722	315	316	756	409	331
35 32	1	224	150	098	280	188	123	337	225	147	393	263	172
	2	449	150	196	561	188	245	634	239	277	671	303	294
	3	619	163	271	677	233	296	722	315	316	756	409	331
37 32	1	224	150	098	280	188	123	337	225	147	393	263	172
	2	449	150	196	561	188	245	634	239	277	671	303	294
	3	619	163	271	677	233	296	722	315	316	756	409	331
39 32	1	224	150	098	280	188	123	337	225	147	393	263	172
	2	449	150	196	561	188	245	634	239	277	671	303	294
	3	619	163	271	677	233	296	722	315	316	756	409	331
41 32	1	224	150	098	280	188	123	337	225	147	393	263	172
	2	449	150	196	561	188	245	634	239	277	671	303	294
	3	619	163	271	677	233	296	722	315	316	756	409	331
43 32	1	224	150	098	280	188	123	337	225	147	393	263	172
	2	449	150	196	561	188	245	634	239	277	671	303	294
	3	619	163	271	677	233	296	722	315	316	756	409	331
45 32	1	224	150	098	280	188	123	337	225	147	393	263	172
	2	449	150	196	561	188	245	634	239	277	671	303	294
	3	619	163	271	677	233	296	722	315	316	756	409	331
47 32	1	224	150	098	280	188	123	337	225	147	393	263	172
	2	449	150	196	561	188	245	634	239	277	671	303	294
	3	619	163	271	677	233	296	722	315	316	756	409	331
49 32	1	224	150	098	280	188	123	337	225	147	393	263	172
	2	449	150	196	561	188	245	634	239	277	671	303	294
	3	619	163	271	677	233	296	722	315	316	756	409	331
51 32	1	224	150	098	280	188	123	337	225	147	393	263	172
	2	449	150	196	561	188	245	634	239	277	671	303	294
	3	619	163	271	677	233	296	722	315	316	756	409	331
53 32	1	224	150	098	280	188	123	337	225	147	393	263	172
	2	449	150	196	561	188	245	634	239	277	671	303	294
	3	619	163	271	677	233	296	722	315	316	756	409	331
55 32	1	224	150	098	280	188	123	337	225	147	393	263	172
	2	449	150	196	561	188	245	634	239	277	671	303	294
	3	619	163	271	677	233	296	722	315	316	756	409	331
57 32	1	224	150	098	280	188	123	337	225	147	393	263	172
	2	449	150	196	561	188	245	634	239	277	671	303	294
	3	619	163	271	677	233	296	722	315	316	756	409	331
59 32	1	224	150	098	280	188	123	337	225	147	393	263	172
	2	449	150	196	561	188	245	634	239	277	671	303	294
	3	619	163	271	677	233	296	722	315	316	756	409	331
61 32	1	224	150	098	280	188	123	337	225	147	393	263	172
	2	449	150	196	561	188	245	634	239	277	671	303	294
	3	619	163	271	677	233	296	722	315	316	756	409	331
63 32	1	224	150	098	280	188	123	337	225	147	393	263	172
	2	449	150	196	561	188	245	634	239	277	671	303	294
	3	619	163	271	677	233	296	722	315	316	756	409	331
65 32	1	224	150	098	280	188	123	337	225	147	393	263	172
	2	449	150	196	561	188	245	634	239	277	671	303	294
	3	619	163	271	677	233	296	722	315	316	756	409	331
67 32	1	224	150	098	280	188	123	337	225	147	393	263	172
	2	449	150	196	561	188	245	634	239	277	671	303	294
	3	619	163	271	677	233	296	722	315	316	756	409	331
69 32	1	224	150	098	280	188	1						

Table showing Properties of Lap Joints—Cont'd

Thickness of Plate	Number of Rows	1/2-in. Rivets			5/8-in. Rivets			3/4-in. Rivets			7/8-in. Rivets		
		Eff.	Pitch	Sec.	Eff.	Pitch	Sec.	Eff.	Pitch	Sec.	Eff.	Pitch	Sec.
1 1/16	1	214	225	147	250	263	172	214	225	147	250	263	172
	2	425	225	294	500	263	344	425	225	294	500	263	344
	3	623	232	428	662	297	455	623	232	428	662	297	455
	4	688	280	473	725	362	498	688	280	473	725	362	498
	5	734	328	505	766	428	527	734	328	505	766	428	527
3/32	1	205	225	147	239	263	172	205	225	147	239	263	172
	2	410	225	294	478	263	344	410	225	294	478	263	344
	3	613	226	441	654	288	470	613	226	441	654	288	470
	4	678	272	487	715	351	514	678	272	487	715	351	514
	5	725	318	521	758	414	545	725	318	521	758	414	545
3/16	1	196	225	147	229	263	172	196	225	147	229	263	172
	2	393	225	295	458	263	344	393	225	295	458	263	344
	3	589	225	442	644	280	483	589	225	442	644	280	483
	4	669	264	502	707	340	530	669	264	502	707	340	530
	5	716	308	537	751	400	563	716	308	537	751	400	563
1/8	1	189	225	148	220	263	172	189	225	148	220	263	172
	2	377	225	295	440	263	344	377	225	295	440	263	344
	3	566	225	442	635	273	496	566	225	442	635	273	496
	4	660	257	516	698	331	545	660	257	516	698	331	545
	5	708	300	553	742	389	580	708	300	553	742	389	580
1/4	1	181	225	147	211	263	171	181	225	147	211	263	171
	2	363	225	295	423	263	344	363	225	295	423	263	344
	3	544	225	442	624	267	507	544	225	442	624	267	507
	4	651	250	529	689	322	560	651	250	529	689	322	560
	5	700	291	569	734	378	596	700	291	569	734	378	596
3/8	1	174	225	147	204	263	172	174	225	147	204	263	172
	2	349	225	294	407	263	344	349	225	294	407	263	344
	3	523	225	441	611	263	516	523	225	441	611	263	516
	4	642	245	542	681	314	575	642	245	542	681	314	575
	5	692	284	584	728	367	614	692	284	584	728	367	614
7/16	1	168	225	147	196	263	172	168	225	147	196	263	172
	2	337	225	295	393	263	344	337	225	295	393	263	344
	3	505	225	442	589	263	515	505	225	442	589	263	515
	4	634	239	555	674	306	590	634	239	555	674	306	590
	5	684	277	599	720	358	630	684	277	599	720	358	630

Plates 1/4 to 7/8 inches thick; rivets, 1/2, 5/8, 3/4, 7/8. These tables have been calculated basing on the following assumptions: If value of plate in tension=100, value of rivet in shear=75, value of rivet in bearing=150. Diameter of rivet hole 1/8 greater than nominal diameter of rivet.

Thickness of plate and number of rows of rivets driven given in left column. Under each rivet size are given efficiency of joint, pitch of rivets and effective section.

Efficiency is given in scale of 1000.

Pitch in inches.—Decimal point, two figures from the right.

Section in inches.—Decimal point, three figures from the right.

## LAPS ARE MADE AS FOLLOWS.

Rivets	Center Rivet to Edge Plate	Spacing of Rivet Lines
1/2	1	1 1/2
5/8	1 1/8	1 3/4
3/4	1 1/4	2
7/8	1 1/2	2 1/2



# Metal Structures



Table Giving Properties of Double Butt  
Strapped Joints

Thick- ness of Plate	3/4-inch Rivets				7/8-inch Rivets				1-inch Rivets			
	Eff.	Pitch	Sec.	Strap	Eff.	Pitch	Sec.	Strap	Eff.	Pitch	Sec.	Strap
1	1 500	225	250	5 3/4" x 1 1/8"	496	263	248	6 1/2" x 1 1/8"	...	...	...	...
	2 720	313	360	9 3/8" x 1 1/8"	724	362	362	11 1/2" x 1 1/8"	...	...	...	...
	3 794	425	397	14 1/4" x 1 1/8"	797	494	399	16 1/2" x 1 1/8"	...	...	...	...
	4 837	538	419	22 1/2" x 1 1/8"	840	625	420	25 1/4" x 1 1/8"	...	...	...	...
1 7/8	1 500	225	266	5 3/8" x 3/8"	500	263	266	6 1/2" x 3/8"	...	...	...	...
	2 720	313	383	9 3/8" x 3/8"	724	362	385	11 1/2" x 3/8"	...	...	...	...
	3 794	425	422	14 1/4" x 3/8"	797	494	423	16 1/2" x 3/8"	...	...	...	...
	4 837	538	445	22 1/2" x 3/8"	840	625	445	25 1/4" x 3/8"	...	...	...	...
1 9/16	1 500	225	281	5 3/4" x 1/2"	500	263	281	6 1/2" x 1/2"	...	...	...	...
	2 720	313	405	9 3/4" x 1/2"	724	362	407	11 1/2" x 1/2"	...	...	...	...
	3 794	425	447	14 1/4" x 1/2"	797	494	447	16 1/2" x 1/2"	...	...	...	...
	4 837	538	471	22 1/2" x 1/2"	840	625	473	25 1/4" x 1/2"	...	...	...	...
1 9/8	1 496	225	295	5 3/8" x 3/4"	500	263	295	6 1/2" x 3/4"	...	...	...	...
	2 718	311	426	9 3/8" x 3/4"	724	362	430	11 1/2" x 3/4"	...	...	...	...
	3 793	422	471	14 1/4" x 3/4"	797	494	473	16 1/2" x 3/4"	...	...	...	...
	4 837	533	497	21 3/8" x 3/4"	840	625	500	25 1/4" x 3/4"	...	...	...	...
5/8	1 471	225	295	5 3/8" x 3/8"	500	263	312	6 1/2" x 3/8"	...	...	...	...
	2 707	299	442	9 3/8" x 3/8"	724	362	453	11 1/2" x 3/8"	...	...	...	...
	3 784	405	490	14 1/4" x 3/8"	797	494	498	16 1/2" x 3/8"	...	...	...	...
	4 829	511	518	21 3/8" x 3/8"	840	625	525	25 1/4" x 3/8"	...	...	...	...
3/4	1 449	225	295	5 3/8" x 1/2"	500	263	328	6 1/2" x 1/2"	...	...	...	...
	2 698	289	458	9 3/8" x 1/2"	724	362	475	11 1/2" x 1/2"	...	...	...	...
	3 764	371	501	13 3/4" x 1/2"	797	494	523	16 1/2" x 1/2"	...	...	...	...
	4 822	491	540	20 3/8" x 1/2"	840	625	552	25 1/4" x 1/2"	...	...	...	...
1 1/8	5 852	592	559	29 3/8" x 1/2"	...	...	...	...	...	...	...	...
	1 428	225	295	5 3/8" x 1/8"	500	263	344	6 1/2" x 1/8"	...	...	...	...
	2 688	280	473	9 3/8" x 1/8"	724	362	498	11 1/2" x 1/8"	...	...	...	...
	3 767	376	527	13 3/8" x 1/8"	797	494	548	16 1/2" x 1/8"	...	...	...	...
1 1/16	4 815	473	560	19 3/8" x 1/8"	840	625	578	25 1/4" x 1/8"	...	...	...	...
	5 846	569	582	28 3/8" x 1/8"	...	...	...	...	...	...	...	...
2 3/4	1 409	225	295	5 3/8" x 7/16"	478	263	343	6 1/2" x 7/16"	...	...	...	...
	2 678	272	487	9 3/8" x 7/16"	715	351	514	11 1/2" x 7/16"	...	...	...	...
	3 759	364	546	13 3/8" x 7/16"	790	476	568	16 1/2" x 7/16"	...	...	...	...
	4 808	456	581	19 3/8" x 7/16"	834	602	600	24 3/4" x 7/16"	...	...	...	...
3 3/4	5 840	548	604	27 3/8" x 7/16"	...	...	...	...	...	...	...	...
	1 392	225	295	5 3/8" x 1/4"	458	263	344	6 1/2" x 1/4"	500	300	375	7 1/2" x 1/4"
	2 668	264	501	9 3/8" x 1/4"	706	341	530	11 1/2" x 1/4"	730	412	548	13 1/2" x 1/4"
	3 751	352	564	13 3/8" x 1/4"	783	461	587	16 1/2" x 1/4"	800	562	600	19 1/2" x 1/4"
3 1/4	4 801	440	601	19 1/8" x 1/4"	828	581	621	24 1/2" x 1/4"	842	713	632	29 1/4" x 1/4"
	5 834	529	626	26 3/8" x 1/4"	857	701	643	34 1/2" x 1/4"	...	...	...	...
2 1/2	1 440	225	295	5 3/8" x 3/16"	440	263	344	6 1/2" x 3/16"	500	300	391	7 1/2" x 3/16"
	2 698	272	487	9 3/8" x 3/16"	698	331	545	11 1/2" x 3/16"	730	412	570	13 1/2" x 3/16"
	3 776	446	606	16 1/2" x 3/16"	776	446	606	16 1/2" x 3/16"	800	562	625	19 1/2" x 3/16"
	4 819	552	640	23 1/2" x 3/16"	819	552	640	23 1/2" x 3/16"	842	713	658	29 1/4" x 3/16"
1 3/8	1 440	225	295	5 3/8" x 1/8"	440	263	344	6 1/2" x 1/8"	500	300	391	7 1/2" x 1/8"
	2 698	272	487	9 3/8" x 1/8"	698	331	545	11 1/2" x 1/8"	730	412	570	13 1/2" x 1/8"
	3 776	446	606	16 1/2" x 1/8"	776	446	606	16 1/2" x 1/8"	800	562	625	19 1/2" x 1/8"
	4 819	552	640	23 1/2" x 1/8"	819	552	640	23 1/2" x 1/8"	842	713	658	29 1/4" x 1/8"
1 1/16	1 440	225	295	5 3/8" x 1/16"	440	263	344	6 1/2" x 1/16"	500	300	391	7 1/2" x 1/16"
	2 698	272	487	9 3/8" x 1/16"	698	331	545	11 1/2" x 1/16"	730	412	570	13 1/2" x 1/16"
	3 776	446	606	16 1/2" x 1/16"	776	446	606	16 1/2" x 1/16"	800	562	625	19 1/2" x 1/16"
	4 819	552	640	23 1/2" x 1/16"	819	552	640	23 1/2" x 1/16"	842	713	658	29 1/4" x 1/16"



Table Giving Properties of Double Butt  
Strapped Joints—Continued

1-inch Rivets			¾-inch Rivets				1-inch Rivets			
Pitch	Sec.	Strap	Eff.	Pitch	Sec.	Strap	Eff.	Pitch	Sec.	Strap
1	1	...	407	263	344	6½"x½"	466	300	393	7½"x½"
2	2	...	682	314	576	11½"x½"	713	392	602	13½"x½"
3	3	...	762	421	646	16½"x½"	788	532	665	19½"x½"
4	4	...	811	528	684	22½"x½"	832	671	702	27¾"x½"
5	5	...	842	635	711	32½"x½"	...	...	...	...
1	1	...	393	263	344	6½"x½"	449	300	393	7½"x½"
2	2	...	674	307	590	11½"x½"	705	382	617	13½"x½"
3	3	...	756	409	662	16½"x½"	782	516	684	19½"x½"
4	4	...	805	512	704	22½"x½"	827	651	724	27"x½"
5	5	...	837	615	732	31½"x½"	...	...	...	...
1	1	...	379	263	344	6½"x½"	433	300	393	7½"x½"
2	2	...	665	299	603	11½"x½"	700	372	634	13½"x½"
3	3	...	750	400	680	16½"x½"	776	503	703	19½"x½"
4	4	...	800	498	725	21½"x½"	822	633	746	27"x½"
5	5	...	833	598	755	30½"x½"	...	...	...	...
1	1	...	367	263	344	6½"x½"	419	300	393	7½"x½"
2	2	...	657	292	616	11½"x½"	690	362	647	13½"x½"
3	3	...	743	389	696	16½"x½"	769	488	721	19½"x½"
4	4	...	794	485	744	21½"x½"	817	614	766	26¼"x½"
5	5	...	829	587	777	30½"x½"	...	...	...	...
1	1	...	355	263	344	6½"x½"	408	300	393	7½"x½"
2	2	...	650	286	630	11½"x½"	684	356	663	13½"x½"
3	3	...	737	380	714	16½"x½"	764	477	740	19½"x½"
4	4	...	789	473	764	21½"x½"	813	599	785	25½"x½"
5	5	...	823	565	797	29½"x½"	...	...	...	...
1	1	...	344	263	344	6½"x½"	393	300	393	7½"x½"
2	2	...	644	280	644	11½"x½"	677	348	677	13½"x½"
3	3	...	730	371	730	16½"x½"	759	466	759	19½"x½"
4	4	...	783	461	783	21½"x½"	807	584	807	25½"x½"
5	5	...	818	551	818	28½"x½"	840	701	840	35½"x½"
6	6	...	844	641	844	39"x½"	...	...	...	...
1	1	...	333	263	344	6½"x½"	381	300	393	7½"x½"
2	2	...	634	275	654	11½"x½"	670	341	691	13½"x½"
3	3	...	724	362	749	16½"x½"	753	455	777	19½"x½"
4	4	...	777	450	801	21½"x½"	803	570	828	25½"x½"
5	5	...	809	534	834	28½"x½"	835	683	861	35½"x½"
6	6	...	840	625	866	37¼"x½"	...	...	...	...
1	1	...	323	263	344	6½"x½"	370	300	393	7½"x½"
2	2	...	630	270	670	11½"x½"	663	334	704	13½"x½"
3	3	...	718	355	763	16½"x½"	747	445	794	19½"x½"
4	4	...	773	440	821	21½"x½"	800	556	850	25½"x½"
5	5	...	810	525	861	27½"x½"	831	667	883	34½"x½"
6	6	...	836	609	888	36½"x½"	...	...	...	...
1	1	...	315	263	344	6½"x½"	360	300	393	7½"x½"
2	2	...	622	265	680	11½"x½"	657	328	719	13½"x½"
3	3	...	712	347	779	16½"x½"	742	436	812	19½"x½"
4	4	...	767	430	839	21½"x½"	793	544	868	25½"x½"
5	5	...	807	518	883	27½"x½"	828	651	905	33½"x½"
6	6	...	832	595	910	36½"x½"	...	...	...	...

## Metal Structures



Table Giving Properties of Double Butt  
Strapped Joints—Continued

[illegible]

Chicago 1

### Detail List

The List is published  
electronically by e-mail

Locat:

ALABAMA

Greenville—Lowell  
 Greenville—Light  
 Greenville—Dallas  
 Light Hill  
 Taylor—Mobile &

ARIZONA

Radberry, U. S. A.  
Fort Defiance, U. S.

## ARKANSAS

Springs...

St. L. Ave.

Red - Tract

Premier C  
F. White R  
D. P. S.

Donnerstag - Stadt C

CALIFORNIA

Water C  
Water D

COLORADO

COGRADO

## CONNECTION

CONNECTICUT  
LAW

—Вилла

# Chicago Bridge & Iron Works

able Butt

## Detail List of Elevated Tanks and Stand Pipes Built by Us

This List is published to aid prospective purchasers who can get information by corresponding with City Officials or Owners.

Location	Water Towers		Stand Pipes	
	Cap'y Gals.	Ht. Ft.	Dia. Ft.	Ht. Ft.
<b>ALABAMA</b>				
Huntsville—Lowe Manufact'ing Co.	30,000	90'6"		
Greensboro—Light & Water Co.	80,000	134'6"		
Huntsville—Dallas Mfg. Co.	75,000	135		
Carbon Hill	80,000	60		
Whistler—Mobile & Ohio R. R. Co.	100,000	89		
<b>ARIZONA</b>				
Hackberry, U. S. A.			15	15
Fort Defiance, U. S. A.			12	12
<b>ARKANSAS</b>				
Silam Springs	110,000	85		
Jonesboro			15	100
Marianna	60,000	131'6"		
Rogers	70,000	101		
Brinkley	50,000	100		
Baring Cross—St. L., I. M. & S. Ry.			25	50
Augusta	40,000	100		
Hamburg—Crossett Lumber Co.	45,000	100		
Little Rock—Traction Co.	63,000	66'6"		
Helena—Premier Cotton Mills	5,000	65		
Esau—Fourche River Lumber Co.	30,000	100		
Little Rock—State Asylum	100,000	159		
Arkansas City	40,000	99		
Thornton—Stout Greer Lum. Co.	50,000	104		
<b>CALIFORNIA</b>				
Porterville	75,000	133		
Chico—Water Co.	100,000	119		
Stockton—Water Co.	200,000	110		
Sheridan—Am. Smelt. & Refn. Co.	50,000	100		
<b>COLORADO</b>				
Littleton			15	75
New Windsor	50,000	80		
Lafayette			12	60
<b>CONNECTICUT</b>				
Bridgeport—Locomotive Co. of Am.	50,000	103		
Bridgeport—Eaton, Cole & Burn-				
ham Co.	100,000	139		
New Haven—Strouse Adler & Co.	40,000	110'6"		
Bridgeport—Union Metallic Cart-				
ridge Co.	100,000	128		
Bridgeport—Bullard Mach. Co.	50,000	129		

# Metal Structures



Location	Water Towers		Stand Pipes	
	Cap'y Gals.	Ht. Ft.	Dia. Ft.	Ht. Ft.
<b>FLORIDA</b>				
Monticello.....	40,000	100		
Live Oak.....	45,000	103		
Pensacola.....	100,000	135		
Pensacola—B. H. Knowles.....	20,000	78'6"		
Perry.....	80,000	114		
Appalachicola.....	100,000	110		
<b>GEORGIA</b>				
Lytle—Camp George H. Thomas.....	30,000	55'6"		
Savannah—Savannah Lum. Co.....	30,000	90'6"		
Fitzgerald—Atlantic & Birmingham Construction Co.....	100,000	128		
<b>IDAHO</b>				
Shoshone—Light & Water Co.....	50,000	85'6"		
Downey—Oregon Short Lines.....	65,000	32'5"		
<b>ILLINOIS</b>				
East Dubuque.....			12	85
Carmi.....			12	116
West Dundee.....	94,000	70		
Rock Island.....			16	80
Gibson City (brick tower).....	35,000	100		
Earlville.....			12	100
Paris.....	106,000	141		
West Chicago.....			16	125
Geneva.....			16	100
Urbana—University of Illinois.....			4	60
Buda.....			10	100
Geneseo—Rock Island System.....			25	60
Greenup.....	60,000	82'6"		
Peru—Zinc Works.....			18	40
McHenry.....			16	91
Vandalia.....	60,000	82'6"		
Barrington.....			18	50
Palatine.....			12	90
Bureau—Rock Island System.....			30	30
Mokena.....	60,000	100		
McLeansboro.....	60,000	122		
Whitehall.....	80,000	114		
Thebes—Rock Island System.....	50,000	50		
Tinley Park.....	60,000	100		
Sullivan.....	80,000	120		
Chicago—P. S. Peterson's Nursery.....	30,000	81		
Lincoln—Hospital for Insane.....	30,000	75'6"		
Peoria—Rock Island System.....			20	60
Morgan Park—Mt. Hope Cemetery.....	20,000	73'6"		
Monmouth.....	115,000	127		
Hillsboro, (brick tower).....	50,000	93		
North Chicago.....	100,000	105		
Marshall.....	80,000	115		
Chicago—Illinois Steel Co.....	100,000	92'6"		
Chicago.....	180,000	145		
Ottawa—Rock Island System.....			20	60
Robinson.....	75,000	110		
Hillsboro—J. R. Challacombe.....	2,000	30		
Hinsdale—E. M. Barton.....	15,000	60		



# Chicago Bridge & Iron Works

Stand Pipes

Dia. Ft. Ht. Ft.

Location	Water Towers		Stand Pipes	
	Cap'y Gals.	Ht. Ft.	Dia. Ft.	Ht. Ft.
<b>ILLINOIS—Cont'd</b>				
Harrisburg	80,000	80		
Riverdale	60,000	120		
Chicago—Deering Harvester Works	100,000	169		
Chicago—Nat. Malleable Cast. Co.	40,000	100		
Chicago—Simonds Mfg. Co.	50,000	120		
Arlington Heights	60,000	85		
Plano	80,000	104'6"		
Mt. Sterling (brick tower)	40,000	100		
Marseilles			16	65
Peoria—Coleman Manufacturing Co.	50,000	104		
Hinsdale—E. M. Barton	40,000	100		
Peoria—Peo. & Pek. Un. Ry. Co.	100,000	89		
Joliet	200,000	92'6"		
Wyoming (brick tower)	35,000	100		
Jacksonville—Hospital for Insane	25,000	104		
Danville—C. & E. I. Ry. Co.	100,000	89		
Delavan	70,000	93		
Naperville	100,000	140		
Zeigler	50,000	104		
Crete	50,000	120		
Bartonville—Asylum for Insane	100,000	114		
Chicago—Allis-Chalmers Co.	50,000	135	20	135
Chicago—Allis-Chalmers Co.	100,000	140		
Morgan Park	100,000	140		
Onarga (brick tower)	50,000	92		
Hinckley—C. B. & Q. Ry. Co.	35,000	47		
E. St. Louis—E. St. L. & Sub. Ry.	50,000	59		
Sycamore	200,000	157		
Paris			24	12
St. Charles—Home for Boys	50,000	52		
Ravinia—A. C. Frost	40,000	126'6"		
River Grove—Orphan Society	20,000	107'6"		
Hopedale	50,000	99'		
St. Elmo	60,000	120		
Crescent City	50,000	100		
Chicago—C. & W. I. Ry.	100,000	52'		
West Pullman—Int'l Harvester Co.	100,000	139		
Paw Paw	60,000	102'6"		
Spring Valley	150,000	115'		
West Frankfort—C. & E. I. Ry. Co.	50,000	89		
De Pue—Mineral Point Zinc Co.	100,000	139		
Winthrop Harbor	60,000	100		
Lock Haven—C. P. & St. L. Ry. Co.	60,000	35		
Summit—Resurrection Cemetery	5,000	46		
Newton	80,000	120		
Chicago Heights—E. J. & E. Ry.	100,000	42'6"		
Glenn Ellyn	60,000	106'6"		
McLean—County Asylum	30,000	100'6" 1		
W. Roseland—Paul Vandenburg	5,000	55'		
Mascoutah	50,000	120		
Roodhouse	60,000	120		
Cullom	50,000	129		
Salem—C. & E. I. Ry. Co.	100,000	129		
Kewanee—K. & G. Ry. Co.	50,000	129		
Chicago—Illinois Steel Co.	80,000	70		
East St. Louis—Suburban Ry. Co.	35,000	96		
Rockelle—C. B. & Q. Ry. Co.	50,000	39'6"		



# Metal Structures



Location	Water Towers		Stand Pipes	
	Cap'y Gals.	Ht. Ft.	Dia. Ft.	Ht. Ft.
<b>ILLINOIS—Cont'd</b>				
Milledgeville—C. B. & Q. Ry. Co.	50,000	39'6"		
Chicago—Swift & Co	66,000	118		
Park Ridge	100,000	100		
St. Charles	100,000	119		
Minooka	60,000	120		
Hawthorne—Western Electric Co	50,000	79		
Chicago—Grand Crossing Tack Co.	60,000	131'6"		
Casey	80,000	174'6"		
Bourbonnais	50,000	125		
Morrison—Libby, MacNeil & Libby	30,000	95'6"		
<b>INDIANA</b>				
Monticello			14	110
Booneville	110,000	113'5"		
Huntington			30	75
Rensselaer	100,000	140		
Brownstown			14	80
Napance	75,000	100		
Syracuse			12	50
Tell City	100,000	109'6"		
Noblesville—National Carbon Co.	10,000	94		
Waterloo			12	120
South Bend—Singer Mfg. Co.	20,000	48		
Indianapolis—Nat. Mal'ble Cast. Co.	50,000	94		
Oakland City	60,000	100		
Aurora			40	30
Gas City—U. S. Glass Co.	30,000	100'6"		
Richmond—Hospital for Insane			16	110
Evansville—Hospital for Insane	100,000	139		
Howell—L. & N. Ry. Co.	200,000	109		
St. Mary's Vigo Co—College	100,000	110		
Laketon—Eric R. R. Co.	50,000	39'6"		
Fort Wayne—Wayne Knit. Mills	40,000	101'6"		
Fort Wayne—Traction Co.	25,000	69'		
Indianapolis—E. C. Atkins Co.	50,000	104		
<b>INDIAN TERRITORY</b>				
Chickasha—Rock Island System			20	60
Haileyville—Rock Island System	100,000	120		
Paul's Valley	80,000	160		
Purcell	100,000	120		
Ardmore			25	120
Holdenville	70,000	80		
Oklmulgee	70,000	120		
Wilburton			20	67'6"
Tishomingo	80,000	80		
Ada	80,000	80		
Tulsa			14	100
Bartlesville			10	125
Wagoner—M. K. & T. Ry. Co.	30,000	60		
Davis	50,000	110		
Marlow	50,000	100		
Roff	50,000	110		
<b>IOWA</b>				
Lake City			12	80
Clear Lake			12	80

## Chicago Bridge &amp; Iron Works

Location	Water Towers		Stand Pipes	
	Cap'y Gal.	Ht Ft	Dia Ft	Ht Ft
<b>IOWA—Cont'd</b>				
Port Dodge	104,000	116'6"		
Earle Grove			15	100
Forest City			14	100
Frederick	70,000	100		
Newton			30	16
Waukon			14	100
Oswego			14	80
Waukegan			10	100
Charles City			20	80
Kennett	56,000	75		
Wilton—Rock Island System			20	60
Washington—Rock Island System			20	60
Iowa City—Rock Island System			12	40
Atlantic—Rock Island System			16	40
Osgood	80,000	134		
Kenneth Park	40,000	76'		
Muscatine—County Asylum	20,000	40		
Lidon—Rock Island System			20	60
Garner	60,000	120		
Boonville			10	60
Wilton	50,000	82		
Charlton			20	60
West Liberty	60,000	102		
Pacific Junction—C. B. & Q. Ry.	50,000	41		
Mamou	60,000	128'9"		
Rockford	80,000	120		
Madison	65,000	113'6"		
Iowa City	80,000	74'6"		
Battle Creek	60,000	91'6"		
Oswego	60,000	102		
Durham	65,000	104	20	50
Humboldt				
Sumner	50,000	125		
Coast Rapids—C. M. & St. P. Ry.	80,000	43		
Red Oak—Thos. D. Murphy & Co.	40,000	51'6"		
Valley Junction—C. R. I. & P. Ry. Co.			22	49
Madrid	50,000	120		
Seward—C. M. & St. P. Ry. Co.	80,000	38'6"		
<b>KANSAS</b>				
Herrington—Rock Island System			20	60
Horton—Rock Island System			20	60
McFarland—Rock Island System			20	60
Belleville—Rock Island System			20	60
Goodland—Rock Island System			20	60
Pratt	50,000	80		
Sumner	70,000	101		
LaHarpe	70,000	100		
Cherryvale			16	80
Waverly	30,000	100		
Humbolt	70,000	120		
Chanute—Kansas Natural Gas Co.	10,000	69		
Phillipsburg			22	49
Rosedale—M. K. & T. Ry. Co.	40,000	101'6"		
Lansing Center	70,000	120		
Stallard	50,000	100		
Udall	30,000	75'6"		

# Metal Structures



Location	Water Towers		Stand Pipes	
	Cap'y Gals.	Ht. Ft.	Dia. Ft.	Ht. Ft.
<b>KENTUCKY</b>				
Clinton	40,000	60		
Highlands	80,000	135'6"		
Wycliffe	40,000	75		
Henderson—Coquillard Wag. Wks.	50,000	79		
Glenview	30,000	75'6"		
Henderson Cotton Mills	50,000	99		
Lawrenceburg	60,000	84		
Danville—Cin., N. O. & Tex. Pac.	100,000	81		
Lexington—Cin., N. O. & Tex. Pac.	100,000	50		
Henderson—Delker Carriage Co.	25,000	74		
Lexington—Lex. & East. Ry. Co.	50,000	70'6"		
Louisville—Louisville Water Co.	120,000	220'		
Lexington—L. & E. Ry. Co.	50,000	39'6"		
Hopkinsville—Imperial Tob. Co.	20,000	107'6"		
Lexington—J. J. Fitzgerald			10	55
<b>LOUISIANA</b>				
Natchitoches	60,000	115		
Ruston	80,000	84		
Jennings	65,000	112		
LeCompte	30,000	100		
Clarks—Louisiana Cent. Lumber Co.	45,000	85		
Rayne	50,000	104		
Washington	50,000	100		
Shreveport—N. O. & N. E. Ry. Co.	50,000	69'6"		
Minden	100,000	119		
Lake Providence	60,000	112		
Boyce	50,000	100		
Vidalia	50,000	100		
Marksville	70,000	110		
Natalbany—Natalbany Lum. Co.	60,000	136'6"		
Trout—Good Pine Lumber Co.	25,000	97'		
Selma—Grant Land & Lumber Co.	25,000	97'		
Minden—Minden Lumber Co.			16	16
<b>MAINE</b>				
South Berwick—Cummings Shoe Co.	40,000	101'6"		
Fort McKinley, U. S. A.	150,000	120'6"		
Katahdin Pulp & Paper Co.	40,000	76'6"		
Spragues Falls—St. Croix Pap. Co.	75,000	145		
<b>MARYLAND</b>				
Tacoma Park	50,000	164		
Hyattsville	100,000	103		
Forest Glen—Nat. Park Seminary	40,000	99'3"		
Hagerstown—Pope Mfg. Co.	50,000	129		
College Park P. O.—Md. Agri. Col.	30,000	95'6"		
Baltimore—West Md. & Tide W. Ry.	25,000	53		
Baltimore Fidelity Warehouse Co.	40,000	82		
Baltimore—Md. Color Ptg. Co.	30,000	34		
Hagerstown—Hag. Furniture Co.	40,000	126'6"		
<b>MASSACHUSETTS</b>				
Webster—Slater Woolen Mills	100,000	89		
North Adams—Arnold Print Wks.	50,000	89		
Millville—Woonsocket Rubber Co.	50,000	129		

## Chicago Bridge &amp; Iron Works

Location	Water Towers		Stand Pipes	
	Cap'y Gals.	Ht. Ft.	Dia. Ft.	Ht. Ft.
<b>MASSACHUSETTS—Cont'd</b>				
E. Pepperel—Nashua R. Paper Co.	50,000	89	.....	.....
Wheelwright—Wheelwright Pap. Co.	50,000	104	.....	.....
Walpole.....	.....	.....	40	45
West Newton—Martin Mfg. Co.	25,000	84	.....	.....
Boston—Boston & Maine Ry.	100,000	239	.....	.....
Boston—Boston & Maine Ry.	100,000	179	.....	.....
<b>MICHIGAN</b>				
Richmond.....	.....	.....	12	100
Munissing.....	.....	.....	25	40
Paw Paw.....	60,000	115	.....	.....
Hartford.....	40,000	100	.....	.....
Leslie.....	.....	.....	12	80
Algonac.....	50,000	80	.....	.....
New Baltimore.....	40,000	100	.....	.....
Armada.....	40,000	100	.....	.....
Bangor.....	50,000	120	.....	.....
Coopersville.....	30,000	110'6"	.....	.....
Corunna.....	60,000	91'6"	.....	.....
Grand Rapids—Pere Mar. Ry. Co.	100,000	89	.....	.....
Detroit—American Blower Co.	60,000	156'6"	.....	.....
Clare.....	75,000	115	.....	.....
Manistique.....	50,000	100	.....	.....
Grosse Point.....	100,000	88	.....	.....
Charlevoix.....	100,000	145	.....	.....
Spring Lake.....	30,000	125'6"	.....	.....
<b>MINNESOTA</b>				
New Ulm.....	.....	.....	11	36
Northfield.....	.....	.....	35	35
Wayzata.....	13,000	28	.....	.....
Le Sueur.....	.....	.....	18	75
Morris.....	75,000	100	.....	.....
Redwood Falls.....	100,000	120	.....	.....
Hendricks.....	60,000	108	.....	.....
Warren.....	50,000	110	.....	.....
Mora.....	50,000	110	.....	.....
Montgomery.....	52,000	101	.....	.....
Fond du Lac—Gt. North. Pow. Co.	308,000	229	.....	.....
Stillwater—Water Co.	.....	.....	20	45
<b>MISSISSIPPI</b>				
Oxford.....	65,000	124	.....	.....
Port Gibson.....	80,000	125	.....	.....
Brookhaven.....	90,000	130	.....	.....
Senatobia.....	40,000	87	.....	.....
McComb City.....	100,000	114	.....	.....
Como.....	40,000	100	.....	.....
Starkville.....	50,000	100	.....	.....
Clarksdale.....	60,000	100	.....	.....
Corinth.....	50,000	100	.....	.....
Brookhaven—Pearl Riv. Lum. Co.	45,000	100	.....	.....
Meridian—N. O. & N. E. Ry. (2.)	75,000	89	.....	.....
Rosedale Cotton Compress Co.	15,000	95	.....	.....
Greenwood.....	100,000	120	.....	.....
Gloster.....	35,000	118	.....	.....
Sardis.....	60,000	100	.....	.....



# Metal Structures

Location	Water Towers		Stand Pipes	
	Cap'y Gals.	Ht. Ft.	Dia. Ft.	Ht. Ft.
<b>MISSISSIPPI—Cont'd</b>				
Hazlehurst.....	75,000	110		
Rosedale.....	30,000	100		
Magnolia.....	15,000	50		
Hollandale.....	40,000	100		
Picayune—N. O. & Northeast Ry.	75,000	75		
Centerville.....	35,000	108		
Grenada—Ayer & Lord Tie Co.	100,000	88		
Belzona.....	75,000	140		
Mendenhall—Gulf & Ship Isl. Ry.	50,000	35		
Belzona (reservoir tank).....			35	14
Carrollton.....			10	60
Magnolia.....	100,000	100		
Aberdeen.....	100,000	130		
Ellisville.....	60,000	102		
Lumberton.....	60,000	100		
Houston.....	70,000	113		
Raymond.....	30,000	98		
Clarksdale—People's Com. Co.	15,000	93		
New Albany—N. A. Compress Co.	30,000	85'6"		
Jackson—Jackson Graphite Co.	10,000	49		
Macon.....	100,000	128		
Utica.....	50,000	100		
Shelby.....	50,000	100		
<b>MISSOURI</b>				
St. Charles.....				
Sedalia—Mo., Kan. & Tex. Ry. Co.	80,000	90	25	70
West Plains.....				
Paris.....	60,000	110	14	50
Eldorado Springs.....	70,000	86		
Springfield.....				
Rich Hill.....	75,000	120	35	105
Armour—C. B. & Q. Ry. Co.	90,000	56		
Bonne Terre—St. Joseph Lead Co.	36,000	48'6"		
Jefferson Barracks, U. S. A.	150,000	127		
Sulphur Springs—Mo. Pac. Ry. Co.				
Perryville—St. Mary's Seminary	50,000	149	28	24
Cameron.....	70,000	93		
New Madrid.....	50,000	115		
Fulton—Asylum for Deaf & Dumb	40,000	91'6"		
Liberty.....	60,000	97		
Boonville.....	70,000	120		
Kansas City—Griffin Wheel Co.	30,000	110'6"		
Charleston—Water Co.	30,000	100'6"		
Fiat River—Federal Lead Co.	108,000	93		
Fiat River—Federal Lead Co.			50	33
Coburg—C. M. & St. P. Ry. Co.	100,000	39'2"		
Kearney—C. B. & Q. Ry. Co.	100,000	43'2"		
Walden—C. B. & Q. Ry. Co.	100,000	43'2"		
Napier—C. B. & Q. Ry. Co.	100,000	43'2"		
<b>MONTANA</b>				
Shinook.....	100,000	120		
Great Falls.....			40	60
<b>NEBRASKA</b>				
Wakefield.....			12	80

## NEBRASKA—Con

rey.....  
—Rock Island  
—Rock Island  
—Rock Island  
Rock Island S

## NEW HAMPSHIRE

—U. S. N.  
International

## NEW JERSEY

Dea. L. & W  
—Worthen

## N. Y. Ship

City—

Elger Piece

Intern'l Ste

—No. 1000

—No. 1000

—Babcock &

—F. D. Hyde

—Safety In.

—Farr & Baile

—D. L. & W

—D. L. & W

—May Foundr

—Water Co.

—Cora Mills

—Manhattan R

—Wareho

—D. L. & W

## NEW YORK

—Gorton

—Cawanna

—T. & Co. Asy

—General

—Harris—St

—Harris—St

—Harris—St

—Harris—St

—Harris—St

—Harris—St

—Harris—St

—Harris—St

—Harris—St



## Chicago Bridge &amp; Iron Works

Stand Pipes		Water Towers		Stand Pipes	
Dia. Ft.	Ht. Ft.	Cap'y Gals.	Ht. Ft.	Dia. Ft.	Ht. Ft.
<b>NEBRASKA—Cont'd</b>					
		40,000	100		
				12	60
				20	60
				12	40
				12	60
		80,000	84'6"		
				12	60
		50,000	100		
		40,000	98		
		40,000	78		
<b>NEW HAMPSHIRE</b>					
				30	100
		50,000	132		
<b>NEW JERSEY</b>					
				20	48
		100,000	139		
		185,000	120		
		150,000	242		
		150,000	135		
		25,000	69'6"		
		75,000	98		
		100,000	150		
		60,000	100		
		100,000	139		
		100,000	140		
		25,000	80		
		50,000	104		
		100,000	149		
		100,000	139		
		100,000	139		
		30,000	85'6"		
		30,000	90		
		50,000	129		
		50,000	104		
		30,000	45'6"		
		60,000	44		
<b>NEW YORK</b>					
				14	75
				20	80
				20	85
		112,000	162		
		25,000	100		
				60	50
		100,000	140		
		100,000	109		
				90	55
		50,000	129		
		50,000	51		
		100,000	139		
		50,000	104		
				27	44
				20	85

# Metal Structures



Location	Water Towers		Stand Pipes	
	Cap'y Gals.	Ht. Ft.	Dia. Ft.	Ht. Ft.
<b>NEW YORK—Cont'd</b>				
Poughkeepsie—De Laval Sep. Wks.	80,000	95'6"		
Rochester—Stromberg-Carl's'n Tele- phone Co.	100,000	139		
Scotia	100,000	159		
Sherrill—Oneida Community Co.	30,000	75'6"		
Watertown—N. Y. Air Brake Co.	75,000	135		
Utica—Foster Bros.	40,000	101'6"		
Irrington—Isaac Stern.	100,000	48'2"		
Elmsford			15	75
Saratoga Springs—Clark Text. Co.	40,000	115		
Hawthorne			15	75
Buffalo—Geo. N. Peirce	60,000	106'6"		
Scarborough—James Speyer	30,000	54		
<b>NORTH CAROLINA</b>				
Charlotte	50,000	80		
Reidsville	75,000	125		
Wadesboro	75,000	125		
High Point	150,000	165		
Clifton—Clifton Mfg. Co.	50,000	61		
Clifton—Clifton Mfg. Co.	60,000	51'6"		
Glendale—Clifton Mfg. Co.	60,000	61'6"		
Washington	100,000	128		
Greensboro	200,000	174		
Old Fort—U. S. Leather Co.			20	60
Wilson—Imperial Tobacco Co.	25,000	100		
Rocky Mount—Imperial Tob. Co.	20,000	97'6"		
Greenville—Imperial Tobacco Co.	20,000	102'6"		
Morganton			14	84
Oxford	100,000	139		
Graham	75,000	159		
West Raleigh—Agricultural Col.	30,000	90'6"		
Spencer	75,000	159		
Gastonia—Loray Mills	30,000	75'6"		
Burlington—Glencoe Mills	30,000	85'6"		
Asheville—Southern Ry.	100,000	63'2"		
Gastonia—Clara Mfg. Co.	50,000	79'		
Lumberton—Dresden Cotton Mills	40,000	76'6"		
<b>NORTH DAKOTA</b>				
Jamestown			20	55
<b>OHIO</b>				
Bluffton	85,000	112'8"		
Lynchburg	40,000	98		
Delphos			20	130
Rockford			11	100
Blanchester	50,000	110		
Galion	155,000	162'6"		
Shelby			16	130
Hiram			12	60
Continental			10	100
Chicago	80,000	103		
Sycamore	40,000	100		
College Hill	100,000	154		
Fort Recovery	50,000	110		
Leipsic	50,000	115		

## OHIO—Cont'd

Location  
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 Water

## OKLAHOMA

U. S. A.  
 K. C. M. &  
 PENNSYLVANIA  
 D. L. &  
 D. L.  
 R. H.  
 Hers

# ures Chicago Bridge & Iron Works

Location	Water Towers		Stand Pipes	
	Cap'y Gals.	Ht. Ft.	Dia. Ft.	Ht. Ft.
<b>OHIO—Cont'd</b>				
Van Wert.....	120,000	150		
Waynesville.....			12	80
Cuyahoga Falls.....	100,000	84		
Hamilton—Champion Paper Co.....	125,000	100		
Cleveland—National Carbon Co.....	40,000	100		
Hazlet—Pitts. & L. E. R. R. (2).....	60,000	51'6"		
Plymouth.....	50,000	129		
Columbus Grove.....	60,000	115		
Mt. Gilead.....	50,000	129		
Gambier—Kenyon College.....	40,000	77'6"		
New Vienna.....	50,000	115		
Bainbridge.....	30,000	109'6"		
West Milton.....	40,000	140		
New Bremen.....	40,000	110		
Johnstown.....	40,000	110		
Vermillion.....	100,000	100		
Columbus State Hospital.....	100,000	150		
Covington.....	50,000	150		
Upper Sandusky—Water Co.....	100,000	100		
Lancaster—Ohio Flint Glass Wks.....	75,000	135		
Fremont—National Carbon Co.....	30,000	100'6"		
State Soldiers' Home, Erie County.....	60,000	150		
Fredericktown.....	40,000	110		
Rocky River—Water Co.....			15	100
<b>OKLAHOMA</b>				
Shawnee.....	100,000	140		
Ponca City.....	100,000	120		
Stillwater.....	100,000	120		
Kingfisher.....	100,000	140		
Newkirk.....	100,000	140		
Hennessey.....	30,000	100		
Tonkawa.....	60,000	120		
Pond Creek.....	60,000	120		
Blackwell.....	80,000	160		
Whiteagle—Ponca Indian School.....	20,000	91		
Medford.....	60,000	120		
Alva.....	60,000	106'6"		
Guymon.....	40,000	66'6"		
Watonga.....	40,000	120		
Cordell.....	40,000	120		
Mangum.....	80,000	120		
Chandler.....			12	100'
Bridgeport.....	40,000	120		
Fort Sill, U. S. A.....	100,000	105		
Fairview—K. C. M. & O. Ry. Co.....	50,000	109		
Tecumseh.....	50,000	100		
<b>PENNSYLVANIA</b>				
Nicholson—D. L. & W. R. R. Co.....			22	37'6"
Stroudsburg—D. L. & W. R. R.....			20	60
Lebanon—Lackawanna Steel Co.....	30,000	115		
Philadelphia—Robt. H. Foerderer.....				
Leather Co.....	100,000	139		
Lancaster.....			25	110
Derry Church—Hershey Chocolate Co.....	50,000	90		

# Metal Structures

Location	Water Towers		Stand Pipes	
	Cap'y Gals.	Ht. Ft.	Dia. Ft.	Ht. Ft.
<b>PENNSYLVANIA—Cont'd</b>				
Shamokin—Shamokin Lumber Co.	30,000	120'6"		
Jeannette—Jeannette Glass Wks.	75,000	135		
Pittsburg—Pittsburg Rys. Co.	75,000	135		
<b>RHODE ISLAND</b>				
Natick—B. B. & R. Knight Mills.	100,000	60		
Pontiac—B. B. & R. Knight Mills.	60,000	146		
Apponaug—Wm. Wanton Dunnell	100,000	139		
Providence—Pocassett Worsted Co.	50,000	119		
Georgiaville—Bernon Mills.	40,000	60		
Thornton—H. Hartley.	50,000	119		
Warren—Warren Mfg. Co.	75,000	135		
Warren—Parker Mills	75,000	135		
<b>SOUTH CAROLINA</b>				
Greenville—Monaghan Mills.	60,000	131'6"		
Griers—Victor Manufacturing Co.	60,000	112		
Union—Monarch Mills.	40,000	132		
Darlington—Darlington Mills.	50,000	114		
Spartanburg—Saxon Mills.	40,000	122'6"		
Woodruff—Woodruff Mills	50,000	121		
Florence.	100,000	132		
Belton—Belton Mills	100,000	120		
Honea Path—Chiquola Mfg. Co.	50,000	125		
Ninety-Six Cotton Mill.	40,000	106'6"		
Greenwood—Grendel Mills	40,000	101'6"		
Greenville—Woodside Mills	50,000	125		
Spartanburg—Drayton Mills	40,000	106'6"		
Clifton—Clifton Mfg. Co.	100,000	139		
Belton—John B. Adler	2,000	42'		
Sampit—Georgetown Water Co.	75,000	130		
Georgetown—Georgetown Wat. Co.	100,000	130		
Belmont—Imperial Yarn Mills.	50,000	89		
Iva—Jackson Mills.	50,000	129		
<b>SOUTH DAKOTA</b>				
Madison.			14	100
Brookings.	135,000	124		
Webster.	85,000	122		
Millbank.	80,000	120		
Sioux Falls.	230,000	129'11"		
<b>TENNESSEE</b>				
Mt. Pleasant.	40,000	100		
Memphis—Memphis Trotting Assn.	50,000	69		
Dyersburg.			27	50
Springfield.	75,000	120		
Bolivar.	50,000	120		
Franklin.	103,000	114		
<b>TEXAS</b>				
Pilot Point.	10,000	62		
Hillsboro.			14	116
Franklin.			10	75
Plano.			12	80
Corsicana.			20	100
Wichita Falls.	100,000	90		

Chicago B

TEXAS—Cont'd

Grine  
Wald & New  
na—Internati  
H. S. U. S.  
U. S. A.  
Corsicana C  
University of T  
Deaf & Dumb  
University of T

U. S. A.

Kingsville I  
W. T.

Water C.

K & T R  
Mining Co  
Kennedy, Co

UTAH

A. S. S. & I

VERMONT

Centenden P  
Regate

VIRGINIA

Agri  
Smith T  
A. S. S. & I

WASHINGTON

W. S. S. & I

WISCONSIN

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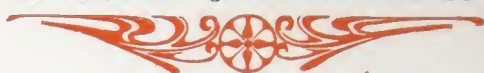
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## Chicago Bridge &amp; Iron Works

Location	Water Towers		Stand Pipes	
	Cap'y Gals.	Ht. Ft.	Dia. Ft.	Ht. Ft.
<b>TEXAS—Cont'd</b>				
Honey Grove.....	150,000	120		
Houston—Weld & Neville Co.....	60,000	110		
Texarkana—International Creosot- ing Co.....	70,000	113		
Amarillo.....	60,000	80		
Marlin.....	80,000	120		
Fort Sam Houston, U. S. A.....	70,000	94		
Fort Clark, U. S. A.....	60,000	92'6"		
Marshall.....	160,000	125		
Corsicana—Corsicana Cotton Fact.	40,000	81'6"		
Austin—University of Texas.....	200,000	120		
Austin—Deaf & Dumb Institute.....			18	100
Austin—University of Texas.....			6	15
Alvarado.....			12	100
Sherman.....			20	120
Fort Brown, U. S. A.....	50,000	79		
Clarksburg.....	80,000	80		
Jefferson.....	40,000	60'		
Kingsville—Kingsville Land Co.....	50,000	104'		
N. Fort Worth.....	100,000	100		
Pittsburgh.....	50,000	100		
Hondo.....	50,000	79		
San Antonio.....	15,000	100		
Middletown—Water Co.....	60,000	96'6"		
Jacksonville.....	50,000	110		
Hodge—M. K. & T. Ry. Co.....	30,000	60'		
Llano—Llano Milling Co.....			15	100
Kennedy—Kennedy Cotton Oil Co.	30,000	95'6"		
<b>UTAH</b>				
Murray—Am. Smelt. & Refin. Co.(2)			20	40
<b>VERMONT</b>				
Rutland—Chittenden Power Co....	70,000	220'		
East Ryegate—Ryegate Paper Co..	50,000	64		
<b>VIRGINIA</b>				
Blacksburg—Agricultural College...	50,000	120		
Danville—American Tobacco Co....	50,000	129		
Richmond—American Cigar Co.....	60,000	131'6"		
Chatham.....			20	40
Lynchburg—American Snuff Co....	40,000	93'6"		
<b>WASHINGTON</b>				
Davenport.....	60,000	85		
Pullman—Agricultural College.....	70,000	65		
<b>WISCONSIN</b>				
Augusta.....	60,000	140		
Westby.....			16	50
Oconomowoc.....	80,000	115		
Viroqua—County Asylum.....	40,000	100		
N. Fond du Lac—W. C. R. R. Co..			25	60
Lancaster—County Asylum.....	40,000	100		
Jefferson.....			12	100
Evansville.....			12	75
Stanley.....	80,000	100		
Reedsburg (brick tower).....	60,000	100		

# Metal Structures



Location	Water Towers		Stand Pipes	
	Cap'y Gals.	Ht. Ft.	Dia Ft.	Ht. Ft.
<b>WISCONSIN—Cont'd</b>				
Merrillan.....	50,000	110		
Janesville—County Asylum.....	50,000	100		
Cuba City.....	65,000	124		
LaCrosse—County Asylum.....	80,000	114'6"		
Fond du Lac—Fred Rueping Leather Co.....	50,000	109		
Waupaca—Wis. Veteran's Home.....	80,000	92'4"		
Abbottsford—Wis. C. R. R. Co.....			20	60
Milwaukee—National Electric Co.....	50,000	129		
Milwaukee—Allis-Chalmers Co.....	100,000	164		
Oshkosh—Winnebago Co. Asylum.....	80,000	114'6"		
Barksdale—Atlantic Mfg. Co.....	75,000	110		
Chetek.....	50,000	110		
Kiel.....	60,000	107'6"		
Hazel Green.....	30,000	78'		
East Winona—C. B. & Q. Ry. Co.....	100,000	43'2"		
De Pere (2).....	50,000	145		
Owen—Wis. Cent. Ry. Co.....			20	80
Fond du Lac—County Asylum.....	20,000	91		
Kenosha.....	250,000	138		
New London—Wisconsin Chair Co.....	40,000	96'6"		
Boyd.....	40,000	84'		
<b>CANADA</b>				
Pictou, Nova Scotia.....			40	60
Toronto, Ont.—Can. Gen. Elec. Co.....	100,000	139		
Edmonton, Northwest Territory.....	75,000	91		
Montreal, Quebec—Can. Pac. Ry.....	75,000	85		
Niagara Falls, Ontario—Canadian Niagara Power Co.....			30	116
Lethbridge, Northwest Territory.....			20	80
Winnipeg, Manitoba—Can. Pac. Ry.....	125,000	135		
St. Boniface, Manitoba.....	106,000	141		
Galt, Ont.—Goldie & McCulloch Co.....	30,000	114'		
Montreal, Que.—Canada Car Co.....	75,000	105		
Montreal, Que.—Sim. Ry. Appl. Co.....	50,000	104		
Strathcona, N. W. T.....	120,000	120		
Sturgeon Falls, Ont.—Northern Sulphite Mills.....	125,000	136'6"		
Aurora, Ont.....	60,000	60		
MacLeod, Alb.....	120,000	120		
Medicine Hat, Alb.....			35	70
<b>CUBA</b>				
Nipe Bay—Nipe Bay Company.....	12,500	109'6"		
<b>MEXICO</b>				
Mexico—Mex. Car. & Foundry. Co.....	66,000	84		
Velardina—Mining Co.....	50,000	81		
Torreón.....	25,000	124		
<b>PANAMA, CANAL ZONE</b>				
Culebra, U. S. A.....	50,000	65'		
Colon, U. S. A.....	400,000	112'6"		
Mt. Hope, U. S. A.....			40	53'6"
<b>PHILIPPINE ISLANDS</b>				
Parang—U. S. Naval Station.....	100,000	80'		

Chicago Br

Total Number

FOR Municipalities...  
Factories and Mill  
Railways...  
Asylums and Publ  
Government Prop  
Schools and Colleg  
Private Estates  
Pleasure Resorts  
Power Companies  
Cemeteries...  
Nurseries...

See Metal list for location

List of Railway

Delaware, Lackawan  
Pennsylvania,  
Boston & Maine,  
Portland & Lake Er  
Providence, New Orle  
New Orleans & Nort  
Chicago & Eastern Il  
Chicago, Burlington &  
Chicago, Rock Island  
Mountain Pacific,  
Missouri, Kansas & T  
Washington Central  
St. Louis, Iron Mount  
St. Paul & Ship Island  
Peoria & Pekin Unio  
Chicago, Milwaukee &  
Chicago & Western I  
Port Marquette,  
Leeward Pacific,  
En  
Chicago, Peoria & St.  
Lexington & Eastern  
Louisville & Nashville  
Long Short Lines  
Kansas City, Mexico  
El Paso & Easter  
Eastern Maryland  
Tombigbee & Brazos Riv  
Atlanta Birmingham

# ures Chicago Bridge & Iron Works

## Total Number of Structures 690, Divided as Follows

FOR Municipalities.....	370
Factories and Mills.....	164
Railways.....	88
Asylums and Public Institutions.....	23
Government Properties.....	15
Schools and Colleges.....	12
Private Estates.....	8
Pleasure Resorts.....	4
Power Companies.....	3
Cemeteries.....	2
Nurseries.....	1
	<hr/>
	690

See detail list for location and purchaser.

## List of Railways Using Our Steel Tanks

Delaware, Lackawanna & Western.  
 Pennsylvania.  
 Boston & Maine.  
 Pittsburg & Lake Erie.  
 Cincinnati, New Orleans & Texas Pacific.  
 New Orleans & Northwestern.  
 Chicago & Eastern Illinois.  
 Chicago, Burlington & Quincy.  
 Chicago, Rock Island & Pacific.  
 Missouri Pacific.  
 Missouri, Kansas & Texas.  
 Wisconsin Central.  
 St. Louis, Iron Mountain & Southern.  
 Gulf & Ship Island.  
 Peoria & Pekin Union.  
 Chicago, Milwaukee & St. Paul.  
 Chicago & Western Indiana.  
 Pere Marquette.  
 Canadian Pacific.  
 Erie.  
 Chicago, Peoria & St. Louis.  
 Lexington & Eastern.  
 Louisville & Nashville.  
 Oregon Short Lines.  
 Kansas City, Mexico & Orient.  
 Elgin, Joliet & Eastern.  
 Western Maryland.  
 Southern.  
 Trinity & Brazos River Valley.  
 Atlanta, Birmingham and Atlantic.











